

BOOK REVIEWS

Centrifugal Partition Chromatography, Chromatographic Science Series, Vol. 68. Ed. by ALAIN P. FOUCAULT. Marcel Dekker, Inc., 270 Madison Avenue, New York, NY 10016. 1994. x+415 pp. 15×22.5 cm. \$150.00. ISBN 0-8247-9257-2.

A problem with the all-liquid centrifugal chromatographic techniques (often referred to as "counter-current chromatography") introduced over the past twenty years is their nomenclature. For historical reasons a confusing array of abbreviations has appeared; a common feature of all the new methods is that they rely on the principle of solute partition between two immiscible liquids and involve centrifugal motion. The term "centrifugal partition chromatography," which is also the title of this book, is already used as an ideal global term for the subject. However, the volume reviewed here only covers work performed on instruments manufactured by the Sanki company in Japan and marketed as "centrifugal partition chromatographs." Other aspects of what has generally been called "centrifugal countercurrent chromatography" have been treated in two excellent volumes by N.B. Mandava and Y. Ito ("Countercurrent Chromatography—Theory and Practice") and W.D. Conway ("Countercurrent Chromatography—Apparatus, Theory and Applications").

The first two chapters of the present book describe the operation of centrifugal partition chromatographs, a couple of separation examples, and the theory behind the technique. The first chapter also describes the filling of the instruments and, in this respect, Appendix 1 is rather superfluous since it treats the same issue.

The whole of chapter 3 is devoted to pressure drop. The rotary seals of centrifugal partition chromatographs start to leak above 60 bar and it is important to know about the factors which influence the pressure in the system.

The most useful section in the whole book is probably Chapter 4. This covers different approaches for the choice of solvent systems. The solvent system is crucial to the success of separations and it is important to have as many as possible from which to choose. There is now a large literature available on this subject and, as mentioned here, the best tip is to try certain standard combinations. The use of ternary diagrams is well explained and their description is accompanied by a listing of approximately 80 such diagrams (mainly taken from the collection compiled by Sorensen and Arlt) in Appendix 3. It is just unfortunate that point "S" does not appear in the explanation of ternary diagrams on p. 366. Another notable aspect of Chapter 4 is a description of gradient elution for the fractionation of solutes with widely differing polarities.

The rest of the book contains contributions from various authors concerning applications of centrifugal partition chromatographs. These vary from determination of partition coefficients (Chapters 7 and 8) to the separation of lanthanoid elements (Chapter 9) and metal ions (Chapter 11). Chapter 5, by T. Okuda and collaborators, refers to the separation of plant polyphenols. Tannins, for example, are notoriously difficult to separate, even by hplc. Centrifugal partition chromatography has certain advantages over other chromatographic procedures of this class of compounds, as Okuda shows very clearly.

The preparative separation of other natural products is described in Chapters 6 and 11. Although these two chapters contain some interesting and topical examples, the reader does not really get a representative idea of the wide range of different natural products which have already been isolated by the technique.

Finally, Chapter 10 is dedicated to separator-aided centrifugal partition chromatography and its applications, most importantly with reference to rare earth metal ions.

Some unnecessary repetition occurs in this book. For example, representations of the apparatus are shown in four different places (pp. 26, 52, 303, and 359). Overlapping of solvent selection procedures is found in Chapters 6 and 12.

Although the main value of this volume will be to provide a very useful handbook for operators of Sanki-type chromatographs, the large quantity of information about the choice of solvent systems, including the compilation of ternary diagrams, is of fundamental importance for anyone working with all-liquid separation procedures.

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Enediyne Antibiotics as Antitumor Agents. Ed. by DONALD B. BORDERS and TERRENCE W. DOYLE, Marcel Dekker, Inc., 270 Madison Ave., New York, NY 10016. 1995. xii+466 pp. 15×22.5 cm. \$165.00. ISBN 0-8247-8938-5.

The current requirements for manuscripts submitted to primary scientific journals have made it impossible to tell all but the shortest scientific stories in one publication. It falls to volumes such as the present one to gather all of the fragments contained therein into a coherent whole. The story is that of the enediyne antitumor antibiotics, notably calicheamicin, esperamicin, and neocarzinostatin, whose structures were determined in the mid-1980's by groups at Lederle Laboratories, Bristol Myers, and Sendai, respectively. These compounds share a common mechanism of DNA damage and cytotoxicity.

I recall my shock when I first encountered the proposed structure of esperamicin A₁. What better example could there be of a structure of which no synthetic chemist would ever dream? Here was a barely plausible structure which, if written on an undergraduate examination, would have led to a failing grade. Yet, the exquisitely tuned Bergmann cyclization which drives the DNA-damaging mechanism of the enediynes has provided bioorganic chemistry with an important paradigm for constructing "warheads" for targeted chemotherapy.

The volume is comprised of five parts: 1. Calicheamicins, 2. Esperamicins, 3. Dynemicins, 4. Neocarzinostatin, and 5. Synthetic Methodologies. A total of 18 chapters, most authored by the participants in the stories, give a variety of perspectives on the twists and turns each compound has taken on its path as a drug lead. The topics range from fermentation, biosynthesis, and structure elucidation to toxicology and clinical results. One might point to a degree of repetition between chapters, however the repetition is a consequence of chapters which are designed to stand on their own, and is only a minor annoyance. Detailed charts of nmr and biological data fill out the story and provide a convenient reference.

The only quibble one might have with the book is that it could have benefited from a closer editing. There are many typographical errors and awkward phrases, the removal of which would have improved the readability of the text. Given that both editors and many chapter authors have left the companies in which the work was performed, it is to be wondered rather that they were able to produce a book at all, and they are to be complimented in putting together a comprehensive treatise on the topic of enediynes. Anyone interested in the field would be well advised to purchase the volume, even at the relatively high price it commands. It will be an essential purchase for a library concerned with antitumor chemistry and fermentation.

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